

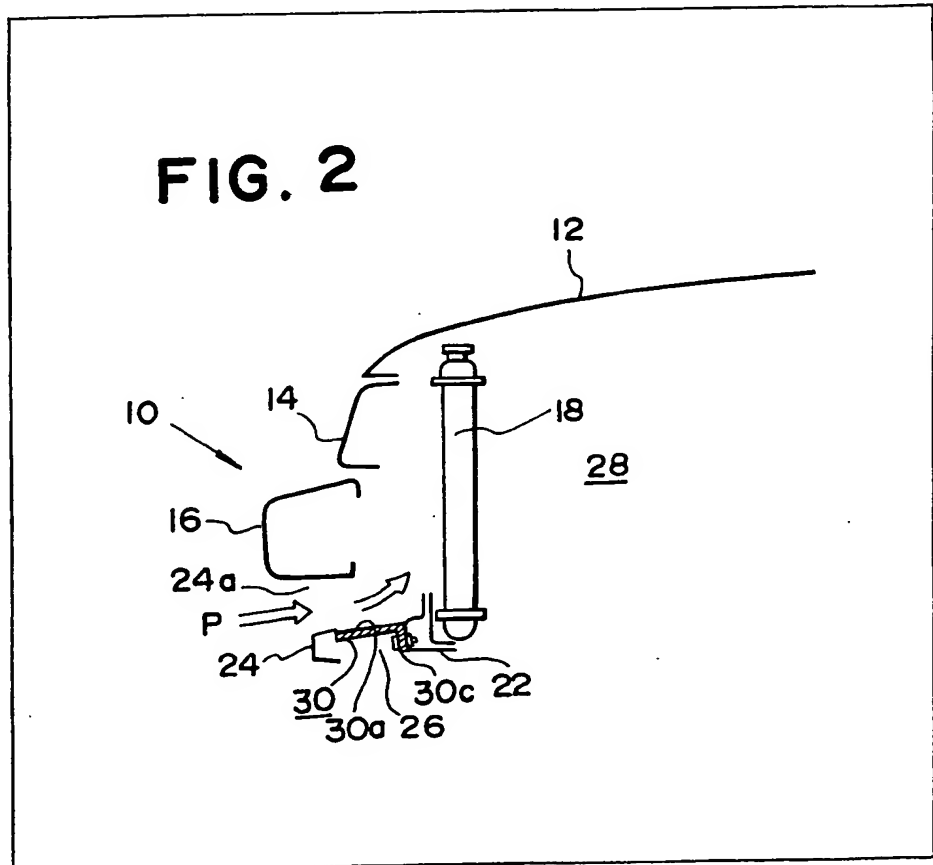
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(54) Vehicle front end structure

(57) In a vehicle having adjacent the forward end thereof a radiator (18) or similar automotive part which needs to be cooled by fresh air, a vehicle front end structure (10) comprises a front apron (24) formed with an air intake opening (24a) and a baffle (30) which is disposed between the front apron and the radiator. The baffle is of U-shaped cross section with respect to a vertical plane across the width of the vehicle body and constructed and arranged to receive almost all of the air stream from the air intake opening of the front apron and deflect the air stream toward the radiator or similar part whereby it is possible to efficiently cool the radiator by the air drawn thereto from the air intake opening of the front apron.



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FIG. 1

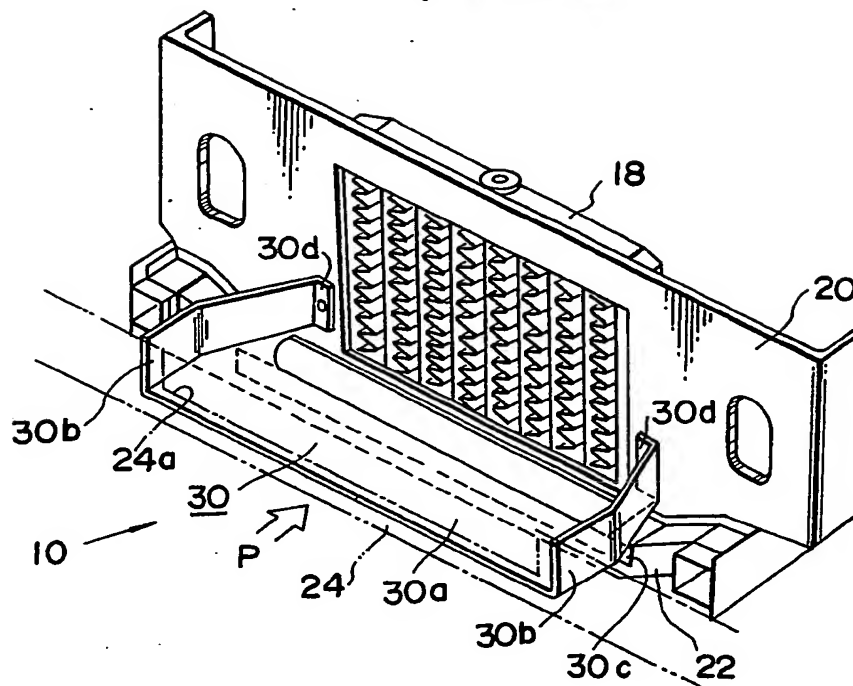
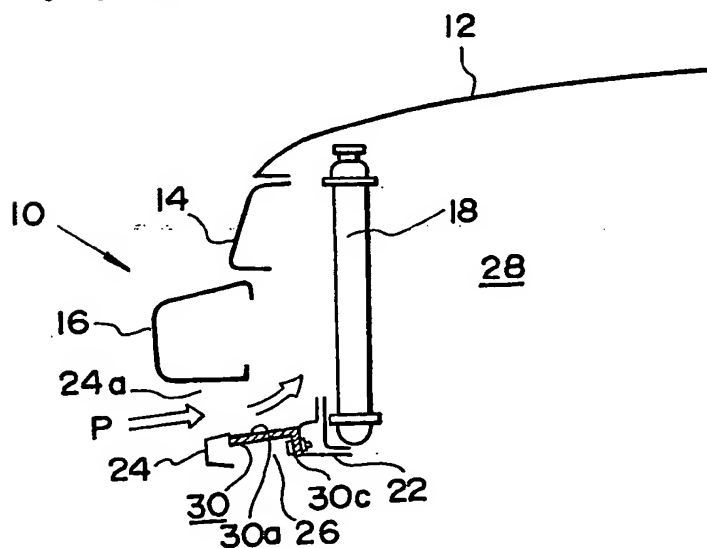


FIG. 2



## SPECIFICATION

## Vehicle front end structure

5 The present invention relates to vehicle front end structures, particularly of the slanted front end automobiles.

In many conventional automotive vehicles, as the distance between a front apron and a vehicle body front cross member was relatively small, a radiator or similar automotive part which needed to be cooled by fresh air could be disposed in close proximity to the front apron. For this reason, the air stream entering through the air intake opening of the front apron as the vehicle moves forwardly, could be efficiently directed to the radiator or similar part and was very useful for their cooling.

In some recent automotive vehicles, it has been the practice to dispose the spoiler portion of the front apron more forwardly than before in order to attain the slatted front end styling (forwardly declined front end).

In such a slanted front end automobile, the distance between the air intake opening of the front apron and the radiator inevitably becomes larger. As a result, a considerable portion of the air stream entering through the air intake opening of the front apron as the vehicle moves forwardly, is likely to be parted from the air stream directed toward the radiator and tends to be directed to the space under the vehicle body and to the lateral sides of the vehicle body, causing the problem that it becomes impossible to efficiently cool the radiator or similar part by the air drawn thereto from the air intake opening of the front apron.

It is accordingly an object of the present invention to provide an improved vehicle front end structure which is constructed to efficiently cool the radiator or similar part by the air drawn thereto from the air intake opening of the front apron.

It is another object of the present invention to provide an improved vehicle front end structure which is provided with baffle means for receiving almost all of the air stream from the air intake opening of the front apron and deflecting it toward the radiator or similar part.

It is a further object of the present invention to provide an improved vehicle front end structure which is well suited for adaption to the existing slanted front end type automotive vehicles.

In accordance with the present invention, there is provided in a vehicle having adjacent the forward end thereof a radiator or similar part which needs to be cooled by fresh air, a vehicle front end structure comprising: a front apron formed with an air intake opening; and baffle means for receiving the air stream from the air intake opening and deflecting it toward the part.

In the accompanying drawings:-

60 *Figure 1* is a perspective view of a vehicle front end structure embodying the present invention; and *Figure 2* is a schematic cross-sectional view of the vehicle front end structure of *Figure 1*.

Referring to *Figures 1* and *2*, the reference numeral 65 10 represents a vehicle front end structure having an

engine bonnet 12, a front grill 14 and a front bumper 16. A radiator 18 is mounted on a radiator core support 20 which is fixedly attached to a vehicle body. A cross member 22 which constitutes part of the vehicle body, is located adjacent the lower end of the radiator 18 and a front apron 24 is disposed ahead of the cross member 22 providing therebetween an opening 26. The apron 24 is formed with an air intake opening 24a which permits air to flow into an engine compartment 28, particularly through the radiator 18.

The foregoing structure follows conventional practice. It will be noted that in the case of slanted front end vehicles the distance between the air intake opening 24a of the apron 24 and the radiator 18 becomes very large. As a result, the opening 26 between the cross member 22 and the apron 24 permits a considerable portion of the air stream from the air intake opening 24a to follow therethrough into the space under the vehicle body thus reducing the amount of air flowing to the engine compartment 28, particularly to the radiator 18.

In the improved vehicle front end structure according to the present invention, there is provided an air scoop or baffle 30 which is of U-shaped cross section with respect to a vertical plane across the width of the vehicle and comprises a flat bottom portion 30a and upwardly extending side flanges 30b. The rearward end of the bottom portion 30a is formed with a downwardly depending flange 30c. The baffle 30 is aligned at the forward end thereof with the air intake opening 24a in a manner to efficiently receive the air stream from the opening 24a and bolted or otherwise attached by suitable fastening means at the flange 30c to a suitable vehicle body portion such as the cross member 22. As shown in *Figure 1*, the baffle 30 is further attached at the rearward end 30d of each flange 30b to the radiator core support 20 or otherwise to a suitable vehicle body portion. The bottom portion 30a of the baffle 30 declines slightly forwardly in order to deflect the air stream from the air intake opening 24a toward the radiator 18, as shown in *Figure 2*.

In operation, almost all of the air stream from the air intake opening 24a of the apron 24 contacts the strategically placed baffle 30 and is deflected therefrom to flow into the engine compartment 28, particularly through the radiator 18. The baffle 30 thus permits an increased amount of air to be directed to the radiator 18. In this instance, it is to be noted that the baffle 30 is constructed and arranged to serve the dual purpose of receiving almost all of the air stream from the air intake opening 24a of the apron 24 and of deflecting the air stream toward the radiator 18.

In the foregoing, since the baffle 30 is an independent part separate from the apron 24 and adapted to be attached to a suitable body portion, such kind of baffle has a good flexibility in design and can be formed into various shapes in dependence upon the shapes of air intake openings of aprons and the distances between the openings and radiators.

By the foregoing, it is to be understood that according to the present invention a vehicle front end structure is provided with a baffle 30 which is

disposed between an air intake opening 24a of an apron 24 and a radiator 18 and which, even in case of slanted front end vehicles, creates an increased air intake efficiency and permits a greater amount of air to be provided to an engine compartment, particularly to the radiator.

#### CLAIMS

1. In a vehicle having adjacent the forward end thereof a radiator or similar part which needs to be cooled by fresh air, a vehicle front end structure comprising:
  - a front apron formed with an air intake opening;
  - and
  - baffle means for receiving the air stream from the air intake opening and deflecting it toward said part.
2. A vehicle front end structure as claimed in claim 1, in which said baffle means comprises a baffle member of U-shaped cross section with respect to a vertical plane across the width of the vehicle body and includes a substantially flat bottom portion and upwardly extending side flanges.
3. A vehicle front end structure as claimed in claim 2, in which said baffle member is an independent part which is separate from the apron.
4. A vehicle front end structure as claimed in claim 2, in which said bottom portion declines forwardly.
5. A vehicle front end structure as claimed in claim 1, in which said vehicle further has a vehicle body front cross member and in which the forward end of said bottom portion is formed with a downwardly depending flange attached to said cross member.
6. A vehicle front end structure substantially as described with reference to and as illustrated in the accompanying drawings.

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